

### REMARKS

Claims 1-5, 8, 18, and 21-26 are pending, with claims 1 and 18 being independent. Claims 6, 7, 9-17, 19, and 20 have been canceled. Claims 18 and 21 have been amended. Support for the amendments can be found in the originally-filed specification at least at page 8, lines 15-25. Claims 22-26 have been added. Support for these new claims can be found in the originally-filed specification at least at page 2, lines 8-13, 20, and 21. No new matter has been added.

#### **Rejection of claims 1, 3, 4, and 8 in view of Kumbera**

Claims 1, 3, 4, and 8 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,168,414 to Kumbera et al. (Kumbera). Applicant requests withdrawal of this rejection because Kumbera does not properly disclose or suggest all of the elements of claim 1. Claim 1 recites (with emphasis added):

A vacuum switching device comprising:  
a vacuum interrupter;  
a current exchange housing adjacent to the vacuum interrupter;  
a seal provided around the vacuum interrupter and the current  
exchange housing so as to define a cavity within the current exchange  
housing and adjacent to the vacuum interrupter; and  
a tube provided within the seal, the tube disposed such that a first  
end of the tube accesses the cavity and a second end of the tube accesses  
an exterior of the seal.

In Kumbera, an annular O-ring seal 59 is formed between a housing 23 of an encapsulated vacuum interrupter 3 and a housing 54 of an operating unit 4. See Kumbera at col. 8, lines 4-25. The O-ring seal 59, the housing 23, and the housing 54 seal the interior of the interrupter 3 from an environment exterior to the housings 23 and 54.

The Office Action appears to assert that the housing 23 forms a seal and that Kumbera's guide tube 47 discloses a "tube provided within the seal, the tube disposed such that a first end of the tube accesses the cavity and a second end of the tube accesses an exterior of the seal." See

the Office Action at page 3. However, Kumbera's guide tube 47 is not provided within the housing 23, the housing 54, or the seal 59 such that a second end of the tube 47 accesses the exterior environment. Rather, the guide tube 47 is positioned entirely within the interior of the interrupter 3 and the unit 4, as shown in Fig. 3 of Kumbera. Kumbera explains that the "housing 54 includes an opening 55 through which the interrupter guide tube 47 and operating shaft extend." See Kumbera at col. 8, lines 11-15.

For at least the above reasons, claim 1 is allowable over Kumbera. Claims 3, 4, and 8 depend from claim 1 and are allowable for at least the reasons that claim 1 is allowable and for containing allowable subject matter in their own right. For example, claim 3 recites that "the tube is integrally formed into the seal during formation of the seal." In Kumbera, the tube 47 is not integrally formed into the seal formed by the housing 23, the housing 54, and the O-ring seal 59. Rather, the tube 47 is formed entirely within the interior of the interrupter 3 and the unit 4, as discussed above.

As another example, claim 4 recites that the "second end of the tube is open to an encapsulation material provided around the vacuum interrupter, the current exchange housing, and the seal." Kumbera does not disclose such a tube. In Kumbera, the vacuum interrupter 3 is cast and encapsulated within the housing 23. See Kumbera at col. 5, lines 58-63. However, no end of the guide tube 47 is open to the housing 23. Rather, the guide tube 47 opens at one end to the conductive housing 42 and at another end to an interior of the unit 4. See Kumbera at Figs. 3 and 4.

#### **Rejection of claims 1-4 and 8 in view of Pflanz**

Claims 1-4 and 8 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,849,617 to Pflanz (Pflanz). Applicant requests withdrawal of this rejection because Pflanz does not disclose or properly suggest a current exchange housing adjacent to a vacuum interrupter, as recited in claim 1.

Pflanz relates to a vacuum interrupter 10 that provides control over a high current arc that is created when the separable contact rods 26 and 27 move apart. See Pflanz at abstract and col.

4 at lines 58-60. In Pflanz, wall members 11 and 14 are sealed by end caps 17 and 18 to define a space 23 within the vacuum interrupter 10 where a vacuum is maintained. See Pflanz at col. 2, lines 54-59. The tube 24 is brazed within an opening in wall member 14 and is used to evacuate space 23. See Pflanz at col. 2, lines 60-65.

The Office Action asserts that Pflanz discloses a current exchange housing adjacent to the vacuum interrupter 10 and refers generally to Fig. 1 of Pflanz. See the Office Action at page 3. Applicant respectfully submits that Fig. 1 of Pflanz does not show a current exchange housing. Fig. 1 of Pflanz shows only the vacuum interrupter 10. See Pflanz at abstract and col. 2, lines 37-39. Moreover, a current exchange housing is never disclosed elsewhere in Pflanz. Additionally, because Pflanz fails to describe or suggest a current exchange housing, the only seal shown in Pflanz, which is formed by the wall members 11 and 14, is not provided around the interrupter 10 and a current exchange housing. Thus, while the tube 24 is formed into the wall member 11, the tube 24 is not formed into a seal that is provided around interrupter 10 and a current exchange housing. For at least these reasons, claim 1 is allowable over Pflanz.

Claims 2-4 and 8 depend from claim 1 and are allowable for at least the reasons that claim 1 is allowable and for containing allowable subject matter in their own right. Claim 4 recites that the "second end of the tube is open to an encapsulation material provided around the vacuum interrupter, the current exchange housing, and the seal." Pflanz does not disclose the use of such an encapsulation material. Thus, no end of Pflanz's tube 24 opens to such an encapsulation material.

#### **Rejection of claims 5, 18, and 21 in view of Pflanz**

Claims 5, 18, and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Pflanz. Applicant requests withdrawal of this rejection for the following reasons.

Claim 5 depends from claim 1 and is allowable for at least the reasons that claim 1 is allowable. As discussed above, Pflanz does not properly disclose or suggest all of the features recited in claim 1. Specifically, Pflanz does not disclose a current exchange housing adjacent to the vacuum interrupter or a seal provided around the vacuum interrupter and a current exchange

housing. Further, there is nothing in the cited references that would have motivated one of ordinary skill in the art to modify Pflanz to produce the subject matter of claim 1.

Claim 18 currently recites (with emphasis added):

A vacuum switching device comprising:  
a vacuum interrupter;  
a hollow housing adjacent to the vacuum interrupter;  
a seal provided around the vacuum interrupter and the hollow housing, the seal defining an air-filled cavity within the hollow housing; and  
a tube provided within the seal and being sealed with cured liquefied encapsulation material to block the passage of air between an exterior of the seal and the cavity.

Applicant requests the withdrawal of the rejection of claim 18 because Pflanz does not properly disclose or suggest all of the features of claim 18. In particular, as discussed above with respect to claim 1, Pflanz does not disclose a housing adjacent to a vacuum interrupter and a seal around the vacuum interrupter and the housing. Rather, Pflanz discloses only the vacuum interrupter 10. See Pflanz at col. 2, lines 37-40 and Fig. 1.

Furthermore, there is nothing in the cited references that would have motivated one of ordinary skill in the art to modify Pflanz to include a hollow housing adjacent to the vacuum interrupter 10 and a seal around the vacuum interrupter and the hollow housing to define an air-filled cavity within the hollow housing. Pflanz discloses an evacuated space 23 within the vacuum interrupter 10, which is evacuated by tube 24 and sealed by end caps 17 and 18. See Pflanz at col. 2, lines 40-41 and 54-59. However, the space 23 is not a hollow housing adjacent to the vacuum interrupter 10. Rather, the space 23 is within the vacuum interrupter 10. Additionally, while the tube 24 is formed into wall member 11, the tube 24 is not formed into a seal that is provided around interrupter 10 and an adjacent hollow housing. For at least these reasons, claim 18 is allowable over Pflanz.

Claim 21 depends from claim 18 and is allowable for at least the reasons that claim 18 is allowable and for containing allowable subject matter in its own right. Claim 21 recites a tube with a diameter large enough to transfer air from the air-filled cavity to the space exterior the seal and small enough to prevent transmission of the liquefied encapsulation material from the

space into the air-filled cavity. Pflanz never suggests that the tube 24 has a diameter small enough to prevent transmission of a liquefied encapsulation material. Rather, Pflanz explains that the tube 24 is actively sealed after the space 23 is "evacuated to the extent desired." See Pflanz at col. 2, lines 60-66.

**New Claims 22-26**

New claims 22-26 depend from claim 18 and are allowable for at least the reasons that claim 18 is allowable and for containing allowable subject matter in their own right. For example, claim 24 recites that "the second end of the tube is open to an encapsulation material provided around the vacuum interrupter, the hollow housing, and the seal." As discussed above, Pflanz does not disclose a tube that is open to an encapsulation material provided around the interrupter 10.

Enclosed is a \$120 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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